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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 09/321,715 | 05/28/99 | TAKEMURA Y | 0756-1974 |

MMC1/0604
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| EXAMINER | |
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| WILCZEWSKI,M | |
| ART UNIT | PAPER NUMBER |
| 2822 | |

DATE MAILED: 06/04/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trad marks**

# Office Action Summary

| Application No. | Applicant(s) |
|---|---|
| 09/321,715 | Takemura et al. |
| **Examiner** | **Art Unit** |
| M. Wilczewski | 2822 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on *Mar 12, 2001*.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) *1-105* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-105* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☒ The proposed drawing correction filed on *Apr 10, 2000* is: a) ☒ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. *08/287,259*.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *16*
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

## DETAILED ACTION

### *Request for Continued Examination*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 12, 2001, has been entered.

### *Priority*

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 08/287,259, filed on August 8. 1994.

### *Drawings*

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on April 10, 2000, have been approved.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-12, 14-16, 49-58, 60-62, 70-81, 83-85, and 94 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ipri, U. S. Patent 4,597,160, newly cited.**

Ipri discloses a method of fabricating a semiconductor display device which comprises the steps of: forming an amorphous silicon film having a thickness of 1000-5000 angstroms, crystallizing the amorphous silicon film and oxidizing the crystallized silicon film at a pressure of 1 atm and a temperature in the range of 580 °C to 620 °C, see column 2, lines 3-34, the Example, and column 3, lines 20-28. The oxidizing step forms gate insulating layer 23 and then gate electrodes 24 are formed on the gate insulating layer, see figures 1-4. Silicon dioxide layer 22 is formed adjacent the crystallized silicon film.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 17-24, 63-69, 86-93 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, in view of Troxell et al., U. S. Patent 4,851,363, newly cited.**

Ipri is applied as above. Ipri lacks anticipation only of teaching to use an alkali-free glass substrate in the disclosed method of fabricating a thin film transistor. Troxell et al. disclose a method of fabricating polysilicon thin film transistors on inexpensive alkali-free glass substrates which require processing temperatures of less than about 800 °C. It would have been obvious to one skilled in the art that the alkali-free glass substrate of Troxell et al. could be used in the known method of Ipri, since the processing temperatures of Ipri are less than about 800 °C.

**Claims 13, 59, 82, 98, 102, and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, as applied to claims 1, 9, 49, 56, 70, and 78 above, and further in view of Wolf et al., pages 216-217, of record.**

Ipri is applied as above. Ipri lacks anticipation only of disclosing that the steam oxidation step is a pyrogenic oxidation step. Wolf et al. disclose that high pressure steam oxidations can be performed in pyrogenic oxidation systems, see page 217. Hence, it would have been obvious to one skilled in the art that the high pressure steam oxidation step of Ipri could have been performed in a pyrogenic oxidation system, since pyrogenic oxidation systems are able to produce

water at high pressures. Performance of the oxidation step of Ipri in a pyrogenic oxidation system would make the oxidation step of Ipri a pyrogenic oxidation step.

**Claims 99, 103, and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, in view of Troxell et al., as applied to claims 17, 63, and 86 above, and further in view of Wolf et al., pages 216-217, of record.**

Ipri and Troxell are applied as above. Ipri lacks anticipation only of disclosing that the steam oxidation step is a pyrogenic oxidation step. Wolf et al. disclose that high pressure steam oxidations can be performed in pyrogenic oxidation systems, see page 217. Hence, it would have been obvious to one skilled in the art that the high pressure steam oxidation step of Ipri could have been performed in a pyrogenic oxidation system, since pyrogenic oxidation systems are able to produce water at high pressures. Performance of the oxidation step of Ipri in a pyrogenic oxidation system would make the oxidation step of Ipri a pyrogenic oxidation step.

**Claims 25-36, 38-40, and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, in view of Wolf et al., pages 171-175, both newly cited.**

Ipri discloses a method of fabricating a semiconductor display device which comprises the steps of: forming an amorphous silicon film having a thickness of 1000-5000 angstroms, crystallizing the amorphous silicon film and oxidizing the crystallized silicon film at a pressure of 1

atm and a temperature in the range of 580 °C to 620 °C, see column 2, lines 3-34, the Example, and column 3, lines 20-28. The oxidizing step forms gate insulating layer 23 and then gate electrodes 24 are formed on the gate insulating layer, see figures 1-4. Silicon dioxide layer 22 is deposited by CVD adjacent the crystallized silicon film. Ipri lacks anticipation only of depositing silicon dioxide layer 22 by plasma CVD. However, it is well known that plasma-enhanced CVD permits the deposition of silicon dioxide at low temperatures, which are necessary when using inexpensive glass substrates, has fast deposition rates and provides good step coverage, see Wolf et al., pages 171-175. Therefore it would have been obvious to one skilled in the art that the silicon dioxide layer 22 of Ipri could have been deposited by plasma CVD.

**Claims 41-48 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, in view of Wolf et al., pages 171-175, further in view of Troxell et al., U. S. Patent 4,851,363, newly cited.**

Ipri discloses a method of fabricating a semiconductor display device which comprises the steps of: forming an amorphous silicon film having a thickness of 1000-5000 angstroms, crystallizing the amorphous silicon film and oxidizing the crystallized silicon film at a pressure of 1 atm and a temperature in the range of 580 °C to 620 °C, see column 2, lines 3-34, the Example, and column 3, lines 20-28. The oxidizing step forms gate insulating layer 23 and then gate electrodes 24 are formed on the gate insulating layer, see figures 1-4. Silicon dioxide layer 22 is deposited by CVD adjacent the crystallized silicon film. Ipri lacks anticipation only of depositing

silicon dioxide layer 22 by plasma CVD. However, it is well known that plasma-enhanced CVD permits the deposition of silicon dioxide at low temperatures, which are necessary when using inexpensive glass substrates, has fast deposition rates and provides good step coverage, see Wolf et al., pages 171-175. Therefore it would have been obvious to one skilled in the art that the silicon dioxide layer 22 of Ipri could have been deposited by plasma CVD.

Ipri also lacks anticipation of teaching to use an alkali-free glass substrate in the disclosed method of fabricating a thin film transistor. Troxell et al. disclose a method of fabricating polysilicon thin film transistors on inexpensive alkali-free glass substrates which require processing temperatures of less than about 800 °C. It would have been obvious to one skilled in the art that the alkali-free glass substrate of Troxell et al. could be used in the known method of Ipri, since the processing temperatures of Ipri are less than about 800 °C.

**Claims 100 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, in view of Wolf et al., pages 171-175, as applied to claims 25 and 33, respectively, above, and further in view of Wolf et al., pages 216-217, of record.**

Ipri and Wolf et al. are applied as above. Ipri lacks anticipation only of disclosing that the steam oxidation step is a pyrogenic oxidation step. Wolf et al. disclose that high pressure steam oxidations can be performed in pyrogenic oxidation systems, see page 217. Hence, it would have been obvious to one skilled in the art that the high pressure steam oxidation step of Ipri could have been performed in a pyrogenic oxidation system, since pyrogenic oxidation systems are able

to produce water at high pressures. Performance of the oxidation step of Ipri in a pyrogenic oxidation system would make the oxidation step of Ipri a pyrogenic oxidation step.

**Claim 101 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ipri, U. S. Patent 4,597,160, in view of Wolf et al., Pages 171-175, further in view of Troxell et al., as applied to claim 41 above, and further in view of Wolf et al., pages 216-217, of record.**

Ipri, Wolf et al., and Troxell are applied as above. Ipri lacks anticipation only of disclosing that the steam oxidation step is a pyrogenic oxidation step. Wolf et al. disclose that high pressure steam oxidations can be performed in pyrogenic oxidation systems, see page 217. Hence, it would have been obvious to one skilled in the art that the high pressure steam oxidation step of Ipri could have been performed in a pyrogenic oxidation system, since pyrogenic oxidation systems are able to produce water at high pressures. Performance of the oxidation step of Ipri in a pyrogenic oxidation system would make the oxidation step of Ipri a pyrogenic oxidation step.

***Double Patenting***

Claims 1-105 of this application conflict with claims 1, 2, 12, 13, 17, and 18 of Application No. 09/222,185. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting

claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Claims 1-105 of this application conflict with claims 1 and 6 of Application No. 09/615,078. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Claims 1-105 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-26 of copending Application No. 09/222,185 in view of Fonash, U. S. Patent 5,275,851, of record. The claims of the present application are generic to those presented in application Serial No. 09/222, 185 in that both sets of claims require the oxidation of a crystallized semiconductor film at high pressures. The claims of application Serial No. 09/222,185 further require the use of a crystallization-promoting catalyst. However, it is well known to use a crystallization-promoting catalyst in the crystallization of amorphous silicon films, as evidenced by Fonash et al.

This is a provisional obviousness-type double patenting rejection.

Claims 1-105 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-44 of copending Application No. 09/615,078 in view of Fonash et al., U. S. Patent 5,275,851, of record. The

claims of the present application are generic to those presented in application Serial No. 09/615,078 in that both sets of claims require the oxidation of a crystallized semiconductor film at high pressures. The claims of application Serial No. 09/615,078 further require the use of a crystallization-promoting catalyst. However, it is well known to use a crystallization-promoting catalyst in the crystallization of amorphous silicon films, as evidenced by Fonash et al.

This is a provisional obviousness-type double patenting rejection.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-105 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional cited articles to Katz et al. and Ligenza disclose the high-pressure oxidation of silicon.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (703) 308-2771.

M. Wilczewski
Primary Examiner
Tech Center 2800

MW

May 31, 2001